



Geographic Information Systems (GIS) Spatial Data Compilation of Geodynamic, Tectonic, Metallogenic, Mineral Deposit, and Geophysical Maps and Associated Descriptive Data for Northeast Asia

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**U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY**

PURPOSE OF CD-ROM

The purpose of this publication is to provide a high-quality spatial data compilation (Geographical Information System or GIS) of geodynamic, mineral deposit, and metallogenic belt maps, and descriptive data for Northeast Asia for customers and users. This area consists of Eastern Siberia, Russian Far East, Mongolia, northern China, South Korea, and Japan. The GIS compilation contains integrated spatial data for: (1) a geodynamics map at a scale of 1:5,000,000; (2) a mineral deposit location map; (3) metallogenic belt maps; (4) detailed descriptions of geologic units, including tectonostratigraphic terranes, cratons, major melange zones, and overlap assemblages, with references; (5) detailed descriptions of metallogenic belts with references; (6) detailed mineral deposit descriptions with references; and (7) page-size stratigraphic columns for major terranes.

This CD-ROM report is for sale by U.S. Geological Survey, Information Services, P.O. Box 25286, Denver, CO 80225 (Telephone 888-ASK-USGS) and is available for free downloading without copyright restriction on the World Wide Web at URL <http://pubs.usgs.gov/of/2006/1150/>

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ORGANIZATION OF CD-ROM

At the root level of this CD-ROM are the 1_readme.txt file and the documentation for this publication (OF2006-1150.doc and OF2006-1150.pdf). The materials on the CD-ROM, including maps, tables, and descriptions of spatial data, are stored in the following directories under the indicated file names. The spatial data are in ArcView shape and associated files, and an Access database. Formatted text files are provided as Word 2000 and Portable Document Format (PDF) files. Plain-text files are in ASCII (*.txt) format.

At the root of this CD-ROM are the following major files:

NEAsia.mdb. This file contains the Access database for the spatial data compilation. This database contains all of the descriptions of the geodynamics map units, mineral deposits, metallogenic belts, and citations. This database should be started by double-clicking on the file name before starting the ArcView spatial data compilation (setup.apr).

setup.apr. This file starts the ArcView spatial data compilation. Double-click on this file name after starting the Access data base (NEAsia.mdb) described above. After double-clicking on setup.apr, the program asks for the drive letter containing the CD compilation. Type in the drive letter and press enter to complete the start of the spatial data compilation.

This CD-ROM contains the following directories.

Acrobat. This directory contains Adobe Reader installation programs for Windows and Macintosh computers. After installing this program, the files in PDF (*.pdf) format (text, figures, and maps) can be viewed and printed.

metadata. This directory contains hypertext (.htm) files and EXCEL (.xls) spreadsheet files for metadata, i.e., the description of type and sources of spatial data in the compilation.

NEAsia_gis. This directory contains ArcView files for the spatial data compilation.

PROJMAT. This directory contains NE Asia project materials, including the project emblem, and pamphlets for NE Asia and previous projects.

DATA SOURCES FOR GIS COMPIRATION

This spatial data compilation is derived from the major publications of the joint international project on the Mineral Resources, Metallogenesis, and Tectonics of Northeast Asia. The major publications are:

Descriptions of metallogenic belts, methodology, and definitions for Northeast Asia mineral deposit location and metallogenic belt maps, compiled by Rodionov, S.M., Obolenskiy, A.A., Dejidmaa, G., Gerel, O., Hwang, D.H., Miller, R.J., Nokleberg, W.J., Ogasawara, M., Smelov, A.P., Yan, H., and Seminskiy, Z.V., 2004, U.S. Geological Survey Open-File Report 2004-1252 (CD-ROM), explanatory text, 442 p.
<http://pubs.usgs.gov/of/2004/1252/>

Descriptions of overlap assemblages and tectono-stratigraphic terranes, definitions, and methods for compilation for Northeast Asia geodynamics map, compiled by Parfenov, L.M., Khanchuk, A.I., Badarch, G., Berzin, N.A., Miller, R.J., Naumova, V.V., Nokleberg, W.J., Ogasawara, M., Prokopiev, A.V., and Yan, H., 2004, U.S. Geological Survey Open-File Report 2004-1252 (CD-ROM), explanatory text, 167 p.
<http://pubs.usgs.gov/of/2004/1252/>

Digital Chart of the World (DCW), 1992, United States Defense Mapping Agency, Fairfax, Virginia, scale 1:1,000,000, 4 CD-ROMs.

Digital files for Northeast Asia geodynamics, mineral deposit location, and metallogenic belt maps, stratigraphic columns, descriptions of map units, and descriptions of metallogenic belts (CD and Web versions), edited by Nokleberg, W.J., Badarch, Gombosuren, Berzin, N.A., Diggles, M.F., Hwang, Duk Hwan, Khanchuk, A.I., Miller, R.J., Naumova, V.V., Obolenskiy, A.A., Ogasawara, Masatsugu, Parfenov, L.M., Prokopiev, A.V., Rodionov, S.M., and Hongquan, Yan, 2004: U.S. Geological Survey Open-File Report 2004-1252 (CD-ROM)
<http://pubs.usgs.gov/of/2004/1252/>

Generalized Northeast Asia geodynamics map, compiled by Parfenov, L.M., Khanchuk, A.I., Badarch, G., Berzin, N.A., Hwang, D.H., Miller, R.J., Naumova, V.V., Nokleberg, W.J., Ogasawara, M., Prokopiev, A.V., and Yan, H., 2004, U.S. Geological Survey Open-File Report 2004-1252 (CD-ROM), scale 1:15,000,000
<http://pubs.usgs.gov/of/2004/1252/>

Magnetic Anomaly Map of East Asia, 2002, Geological Survey of Japan/AIST and CCOP, eds.: Geological Survey of Japan/AIST Digital Geoscience Map P-3, scale 1:4,000,000, CD-ROM, 2nd edition.

Magnetic anomaly data of the former U.S.S.R., 1996, National Oceanic and Atmospheric Administration, U.S. Naval Oceanographic Office, National Geophysical Data Center, in collaboration with the Ministry of Geology of the U.S.S.R., CD-ROM.

Metallogenic belt and mineral deposit maps for Northeast Asia, compiled by Obolenskiy, A.A. Rodionov, S.M. Dejidmaa, G., Gerel, O., Hwang, D.H., Miller, R.J., Nokleberg, W.J., Ogasawara, M., Smelov, A. P., Yan, H., and Seminskiy, Z.V. , 2004, U.S. Geological Survey Open-File Report 2004-1252 (CD-ROM), 1 sheet, scale 1:7,500,000, 3 sheets, scale 1:15,000,000, explanatory text, 442 p. <http://pubs.usgs.gov/of/2004/1252/>

Preliminary metallogenic belt and mineral deposit location maps for Northeast Asia (Paper Maps on Demand, and Web versions), by Obolenskiy, A.A., Rodionov, S.M., Dejidmaa, Gunchin, Gerel, Ochir, Hwang, Duk Hwan, Miller, R.J., Nokleberg, W.J., Ogasawara, Masatsugu, Smelov, A.P., Yan, Hongquan, and Seminskiy, Z.V., with compilations on specific regions by Ariunbileg, Sodov, Biryul'kin, G.B., Byamba, Jamba, Davydov, Y.V., Distanov, E.G., Dorjgotov, Dangindorjin, Gamyanin, G.N., Fridovskiy, V.Yu., Goryachev, N.A., Gotovsuren, Ayurzana, Khanchuk, A.I., Kochnev, A.P., Kostin, A.V., Kuzmin, M.I., Letunov, S.A., Li, Jiliang, Li, Xujun, Malceva, G.D., Melnikov, V.D., Nikitin, V.M., Parfenov, L.M., Popov, N.V., Prokopiev, A.V., Ratkin, V.V., Shpikerman, V.I., Sotnikov, V.I., Spiridonov, A.V., Stogniy, V.V., Sudo, Sadahisa, Sun, Fengyue, Sun, Jiapeng, Sun, Weizhi, Supletsov, V.M., Timofeev, V.F., Tyan, O.A., Vetluzhskikh, V.G., Wakta, Koji, Xi, Aihua, Yakovlev, Y.V., Zhizhin, V.I., Zinchuk, N.N., and Zorina, L.M., 2003: U.S. Geological Survey Open-File Report 03-203, 1 sheet, scale 1:7,500,000, 3 sheets, scale 1:15,000,000, explanatory text, 143 p.
<http://pubs.usgs.gov/of/2003/of03-203/>

Preliminary Northeast Asia geodynamics map (Paper Maps on Demand, and Web versions), by Parfenov, L.M., Khanchuk, A.I., Badarch, Gombosuren, Miller, R.J., Naumova, V.V., Nokleberg, W.J., Ogasawara, Masatsugu, Prokopiev, A.V., and Yan, Hongquan, with contributions on specific regions by Belichenko, Valentina, Berzin, N.A., Bulgatov, A.N., Byamba, Jamba, Deikunenko, A.V., Dong, Yongsheng, Dril, S.I., Gordienko, I.V., Hwang, Duk Hwan, Kim, B.I., Korago, E.A., Kos'ko, M.K., Kuzmin, M.I., Orolmaa, Demberel, Oxman, V.S., Popeko, L.I., Rudnev, S.N., Sklyarov, E.V., Smelov, A.P., Sudo, Sadahisa, Suprunenko, O.I., Sun, Fengyue, Sun, Jiapeng, Sun, Weizhi, Timofeev, V.F., Tret'yakov, F.F., Tomurtogoo, Onongin, Vernikovsky, V.A.,

Vladimiro, A.G., Wakita, Koji, Ye, Mao, and Zedgenizov, A.N., 2003: U.S. Geological Survey Open-File Report 03-205, 2 sheets, scale 1:5,000,000 <http://pubs.usgs.gov/of/2003/of03-205/>.

Significant metalliferous and selected non-metalliferous lode deposits, and selected placer districts of Northeast Asia (CD and Web versions), by Ariunbileg, Sodov, Biryul'kin, G.V., Byamba, Jamba, Davydov, Y.V., Dejidmaa, Gunchin, Distanov, E.G., Dorjgotov, Gamyanin, G.N., Gerel, Ochir, Fridovskiy, V.Yu., Gotovsuren, Ayurzana, Hwang, Duk Hwan, Kochnev, A.P., Kostin, A.V., Kuzmin, M.I., Letunov, S.A., Li, Jiliang, Li, Xujun, Malceva, G.D., Melnikov, V.D., Nikitin, V.M., Obolenskiy, A.A., Ogasawara, Masatsugu, Orolmaa, Demberel, Parfenov, L.M., Popov, N.V., Prokopiev, A.V., Ratkin, V.V., Rodionov, S.M., Seminskiy, Z.V., Shpikerman, V.I., Smelov, A.P., Sotnikov, V.I., Spiridonov, A.V., Stogniy, V.V., Sudo, Sadahisa, Sun, Fengyue, Sun, Jiapeng, Sun, Weizhi, Supletsov, V.M., Timofeev, V.F., Tyan, O.A., Veltuzhskikh, V.G., Xi, Aihua, Yakovlev, Y.V., Yan, Hongquan, Zhizhin, V.I., Zinchuk, N.N., and Zorina, L.M., 2003: U.S. Geological Survey Open-File Report 03-220 (CD-ROM), 422 p. Web version available for free at: <http://pubs.usgs.gov/of/2003/of03-220/>.

Stratigraphic columns for Northeast Asia Geodynamics Map, compiled by Parfenov, L.M., Naumova, V.V., Khanchuk, A.I., Badarch, G., Ogasawara, M., Prokopiev, A.V., and Yan, H., 2004, U.S. Geological Survey Open-File Report 2004-1252 (CD-ROM), explanatory text and columns, 185 p. <http://pubs.usgs.gov/of/2004/1252/>

CONTENTS OF DIRECTORIES ON CD-ROM

Directory	File or Subdirectory Names (Alphabetical Order)
Acrobat	Directories Mac and PC containing Adobe Acrobat Reader 6 and 7 installation programs.
Metadata	This directory contains hypertext (.htm) files for detailed metadata, and an EXCEL (.xls) spreadsheet file for a summary metadata. The term <i>metadata</i> refers to the description of type and sources of spatial data in the compilation. For detailed descriptions of metadata, double-click on the following HTM or XLS metadata files: Aeromag_Data.htm Data_Summary.xls Metallogenic_Belts.htm Mineral_Deposits.htm; Overlap_Assemblages.htm Placer_Districts.htm Terranes.htm
NEAsia_gis	This directory contains ArcView files for the spatial data compilation.
PROJMAT	This directory contains the following project information files. NE_Asia_Project_Emblem.pdf NE_Asia_Project_Pamphlet.doc and .pdf Project_Area_Index_Map.pdf RFE-Ak-Can_Cord Project Pamphlet.doc and .pdf
References	This directory contains Word and Adobe Acrobat Reader (PDF) files for complete references for descriptions of map units, mineral deposits, and metallogenic belts.

PROJECTION DATA

Data for this GIS spatial data compilation are compiled in ArcView version 3.2 in Lambert Equal-Area Azimuthal projection with a Reference Latitude of 60 degrees north and a Central Meridian of 110 degrees east.

OBTAINING THIS PUBLICATION

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QUICK START

Users, who quickly want to view and manipulate the ArcView 3.2 GIS compilation and associated Access database, can attempt the following steps.

1. Read this document thoroughly.
2. Ascertain that the computer fulfills the system requirements that are described below.
3. Insert CD-ROM into the CD drive.
4. At the root of the CD, double-click on the file NEAsia.mdb. This file contains the Access database for the spatial data compilation. This database contains the descriptions of the geodynamics map units, mineral deposits, metallogenic belts, references, and links to stratigraphic columns. This database should be started before starting the ArcView spatial data compilation (setup.apr). **Note:** the search feature allowing display of data selected from Access in a linked ArcView window does not work properly unless the user has write access to the database. To gain write access copy the file NEAsia.mdb to a drive on your computer to which you have write access. Uncheck the READ ONLY property of the file.
5. At the root of the CD, double-click on the file setup.apr. This file starts the ArcView spatial data compilation. After double-clicking on setup.apr, the program asks for the drive letter containing the CD compilation. Type in the drive letter and press enter to complete the start of the spatial data compilation.
6. Manipulate the GIS compilation as desired using the ArcView menus.

The requirements to run ArcView 3.2 fall within the MHz and RAM system requirements which Windows 98/98SE, ME, NT4/SP6, 2000 Pro/SP2, and XP Pro requires.

COMPREHENSIVE START WITH COMBINED USE OF ARCVIEW GIS AND ACCESS DATABASE

Users, who want to view and manipulate the ArcView 3.2 GIS compilation and associated Access database, should use the following steps.

1. Read this document thoroughly.
2. Ascertain that the computer fulfills the system requirements that are described below.
3. Insert CD-ROM into the CD drive.
4. Locate the file NEAsia.mdb at the root of the CD. Copy this file to a drive on your computer to which you have write access. Uncheck the READ ONLY property of the file. This file contains the Access database for the spatial data compilation. This database contains all of the descriptions of the geodynamics map units, mineral deposits, metallogenic belts, references, and links to stratigraphic columns. This database should be started before starting the ArcView spatial data compilation (setup.apr).
5. At the root of the CD, double-click on the file setup.apr. This file starts the ArcView spatial data compilation. After double-clicking on setup.apr, the program asks for the drive letter containing the CD compilation. Type in the drive letter and press enter to complete the start of the ArcView GIS spatial data compilation.

VIEWING DESCRIPTIVE DATA IN ACCESS DATABASE

1. Viewing a Description of a Single Mineral Deposit, Placer Deposit, Metallogenic Belt, Terrane, Overlap Assemblage, or Craton.

In Access Window titled North East Asia GIS data: Form, click on down arrow on right side of blank white window to right of word feature to be viewed, such as Terranes. Scroll down and select name of feature, such as Aniva (terrane), and click on this name. After the name is highlighted, double click to open. A new window will appear containing the description.

2. Viewing Stratigraphic Columns for Major Terranes.

a. In the window titled Terranes, to open a stratigraphic column, click the Smiling Face titled Open stratigraphic terrane. In the window titled Stratigraphic Columns, double click on the corresponding PDF file (e.g., ANV_Aniva.pdf). The stratigraphic column will appear in Adobe Acrobat Reader.

b. To view the column (symbol) explanation, click on the icon with the eyeglasses below the title Symbol Explanation.

3. Viewing a Description of a Terrane, Overlap Assemblage, or Metallogenic Belt that Host a Specific Mineral Deposit.

a. As described in above (item 1), select a mineral deposit and open description of deposit.

b. On binocular icon to right, click on icon to right of either Hosting_Terrane, Hosting_Overlap (assemblage), or Metallogenic_belt.

c. Please note that only items with names in white fields can be viewed.

d. Please note that not all deposits have a hosting terrane, overlap assemblage, or metallogenic belt.

4. Viewing All Descriptions in Access Database.

a. Highlight Window titled North East Asia GIS data: Form. Double-click on any of five boxes titled Mineral Deposits, Placer Districts, Metallogenic Belts, Terranes, Overlap Assemblages, or Cratons.

b. A new window with the selected item will appear. The window will display the first record for the selected item.

c. At the bottom of the window, click on the right-pointing arrow to advance through the data for the selected item.

5. Displaying Data in Access Database on ArcView GIS Compilation.

a. On right side of Access window titled North East Asia GIS data: Form, click on Smiling Face icon under Search Maps. A window titled Choose Table will appear.

b. Click and highlight the type of field to be displayed (such as terranes) and click on funnel. A new window entitled Fields Menu : Form will appear.

c. Click and highlight feature to be displayed, such as Tectonic_Environment.

d. Click on funnel and a Choose One window will appear.

- e. Click and highlight name of individual feature (e.g., Accretionary wedge, type A) and click on funnel. The terranes with this tectonic environment will be displayed in the current view.
 - f. Please note that only one feature (e.g., deposit or terrane) at a time can be displayed.
6. Clearing Highlighted Data on ArcView GIS Compilation Display.

a. To clear the highlighted data, make active the theme containing the data, and on the ArcView GIS 3.2 window, click on the extreme right-hand icon (with title of Restore theme to active display) containing right- and left-pointing curved arrows. This action will cause all the features in the theme to be displayed. The theme can then be unchecked to remove all the features.

b. Please note that clearing of highlighted data is important because if not cleared, any subsequent manipulation of data in the GIS compilation will work only with the currently highlighted data.

VIEWING DATA IN ACCESS DATABASE BY HIGHLIGHTING A FEATURE IN THE ARC VIEW PROJECT

1. On the ArcView GIS Compilation window, select and make active a theme, such as All terranes, by clicking somewhere in the legend.
2. Check the box to the left of the theme title, e.g., the box to the left of the words All terranes.
3. On the ArcView GIS 3.2 window, in the second row of icons, click on the icon that is fourth from left that has a box with a plus sign on the upper left corner. This icon has the title of Select Feature in the active themes by pointing or dragging.
4. Click on the specific feature (point or polygon), a terrane for this example. The selected point or polygon will be highlighted in red.
5. Click on the icon on the upper row, second from the right, that is a rectangle with shaded lines from upper left to lower right. This icon has the title of View object descriptions in database.
6. The description of the feature, in this case, of the selected terrane terrane, will appear in a window in the Access database.
7. To clear the selected feature in the ArcView GIS window, select the pull-down menu titled Theme, and click Clear selected features.
8. Please note that a description will only appear for those features described in the database. These features are mineral deposits, placer districts, metallogenic belts, terranes, cratons, and overlap assemblages.

SYSTEM REQUIREMENTS

To use the data on this CD-ROM, you need the following (all trademarks and trade names are the property of their respective owners):

- Hardware that is equipped with an Intel-based or compatible processor and has a CD-ROM drive, a color monitor that can display 256 colors (16.7 million recommended), and a minimum of 256 MB RAM (1 GB or more recommended) (for example: Dell, IBM, Apple Macintosh with Intel Core Duo processor, HP, or Gateway).
- An operating system that is either Microsoft Windows 98SE, ME, NT 4.0/SP6, 2000 Pro/SP2, or XP (2000 or XP recommended).

- Software that includes ESRI ArcView 3.2 or newer (ArcView 9.1 or ArcGIS 9.1 or higher recommended), Adobe Reader 6.0 or higher (7.0.8 recommended) or other software that can translate PDF files.

PORTABLE DOCUMENT FORMAT (PDF) FILES

This CD-ROM contains Portable Document Format (PDF) files for viewing and searching documents. The Acrobat directory contains installers for Adobe Reader 6 and 7 for both Windows (PC directory) and Macintosh (Mac directory). The installers are provided on this disc, or can be downloaded as the latest version of Adobe Reader, free, via the Internet from the Adobe homepage on the World-Wide Web at <http://www.adobe.com/products/acrobat/readstep2.html>. In order to view PDF files you will need a reader that can translate PDF files. This CD-ROM contains a full-text index (index.pdx and associated files in the index directory) that is for use in searching the PDF files for words or sets of words using the search tool in Acrobat Reader.

DISCLAIMERS

This Compact Disc-Read-Only-Memory (CD-ROM) publication was prepared by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed in this report, or represents that its use would not infringe privately owned rights. Reference therein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favouring by the United States Government or any agency thereof.

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ASSOCIATED PROJECT

The materials on this CD-ROM are the result of major compilations and syntheses accomplished during a six-year project was conducted by the U.S. Geological Survey and collaborating resource agencies to provide a critical data base and companion geologic information on the Mineral Resources, Metallogenesis, and Tectonics of Northeast Asia. Data from the project is benefiting participants and customers by: (1) providing a comprehensive international data base on the mineral resources of the region that will be the first, extensive knowledge available in English; (2) providing major new interpretations of the origin and crustal evolution of mineralizing systems and their host rocks, thereby enabling enhanced, broad-scale metallogenic and tectonic reconstructions; and (3) promoting trade and scientific and technical exchanges between North America and Eastern Asia.

Products from the Northeast Asia project are providing sound scientific data and interpretations for commercial firms, governmental agencies, universities, and individuals that are developing new ventures and studies in the project area, and for land-use planning studies that deal with mineral potential and environmental issues. Northeast Asia has vast potential for known and undiscovered mineral deposits; however, before this project, no detailed data on major geologic units, metallogenic belts, and mineral deposits were published in English in the West.

CUSTOMERS AND COLLABORATING AGENCIES

Customers for the Northeast Asia project include: (1) major and minor mining, petroleum, environmental, construction, investment, and information companies, agencies, and organizations, (2) federal and state government agencies; (3) professional organizations; (4) earth science departments at universities; (5) news media; and (6) mineral resource, petroleum, and information company consultants.

The collaborating agencies for the project are the Russian Academy of Sciences, Academy of Sciences of the Sakha Republic (Yakutia), VNIOkeangeologia and Ministry of Natural Resources of the Russian Federation, Yakutian Academy of Sciences, Mongolian Academy of Sciences, Mongolian University of Science and Technology, Mongolian National University, Jilin University, Changchun, China, the China Geological Survey, the Korea Institute of Geosciences and Mineral Resources, the Geological Survey of Japan/AIST, University of Texas Arlington, and the U.S.

Geological Survey. Other U.S.A. project participants are the Colorado School of Mines, Stanford University, the Alaska Miners Association, Fairbanks, and the Northwest Mining Association, Spokane.

STUDY AREA AND PRODUCTS

The study area for the project consists of Eastern and Southern Siberia, Russian Far East, Mongolia, northern China, South Korea, and Japan. The area is approximately bounded by 40° to 82° N. latitude and 75° to 144° E. longitude.

The products resulting from the project include: (a) detailed mineral resource tables and location maps based on original, cited references; (b) regional terrane and overlap-assemblage maps and detailed explanations that will provide the geologic setting for mineral deposits and metallogenic belts; (c) metallogenic-belt and mineral resource maps and interpretations; and (d) metallogenic and tectonic interpretations, including a four-dimensional time-space model depicting the crustal origin and evolution of mineral deposits. Publications for the project consist of, preliminary reports, and new and important regional geologic maps, map explanations, mineral deposit database (this report), and metallogenic belt maps. Publications are being released in paper format (professional scientific journals and USGS publications), digital format (CD-ROM), GIS (ARC-View) format on CD-ROM, and Internet/Web) format.

PROJECT CONTACTS

For additional information about the project, please contact one or more of the following persons.

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MAJOR PROJECT PUBLICATIONS AVAILABLE ON THE WORLD WIDE WEB

Preliminary Publications Book 1 From Project on Mineral Resources, Metallogenesis, and Tectonics of Northeast Asia: U.S. Geological Survey Open-File Report 99-165: <http://pubs.usgs.gov/of/1999/of99-165/>

Preliminary Publications Book 2 From Project on Mineral Resources, Metallogenesis, and Tectonics of Northeast Asia: U.S. Geological Survey Open-File Report 03-203: <http://pubs.usgs.gov/of/2003/of03-203/>

Preliminary Northeast Asia geodynamics map: U.S. Geological Survey Open-File Report 03-205: For a printed Map On Demand, <http://store.usgs.gov/mod/interest.html>. Online version: <http://pubs.usgs.gov/of/2003/of03-205/>

Preliminary metallogenic belt and mineral deposit location maps for Northeast Asia: U.S. Geological Survey Open-File Report 03-204: <http://pubs.usgs.gov/of/2003/of03-204/>

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Digital files for Northeast Asia geodynamics, mineral deposit location, and metallogenic belt maps, stratigraphic columns, descriptions of map units, and descriptions of metallogenic belts: U.S. Geological Survey Open-File Report 2004-1252: <http://pubs.usgs.gov/of/2004/1252/>

A complete list of all project publications is available in the directory titled PROJMAT in the project pamphlet.

MAJOR PUBLICATIONS FROM PREVIOUS CIRCUM-NORTH PACIFIC PROJECT AVAILABLE ON THE WORLD WIDE WEB

Significant Metalliferous and Selected Non-Metalliferous Lode Deposits and Placer Districts for the Russian Far East, Alaska, and Canadian Cordillera: U.S. Geological Survey Open-File Report 96-513-B: <http://pubs.usgs.gov/of/1996/of96-513-b/>

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